Estimated Up-Grade Costs

Quantities used for estimating (length of track, ballast segment, bridge length, etc.) were determined through interviews with the particular railroad or by using track charts. Unit prices were then applied to the quantity of each individual item.

2.3.2 Summary of 286,000 lbs. GWR Capabilities and Capital Requirements for Indiana Short Lines.

Of the 37 short line railroads, 12 are currently capable of handling 286,000 lbs. GWR carloads. These railroads operate 321 route miles, about 26 percent of short line route miles in Indiana, and handled about 6 percent of short line carloads in the year 2000.

Three short lines operating 22 miles indicate that they do not foresee a need for 286 GWR capability.

The remaining 22 short lines have varying capital needs totaling $99.5 million. About one-third of this amount is related to the upgrading of bridges; the remainder is related to track structure, including ballast, ties, and rail. These short lines operate 885 route miles, about 73 percent of short line mileage in Indiana, and handled about 93 percent of short line carloads in the year 2000. About one-half of these short lines are primarily grain haulers.

The total capital requirement of $99.5 million is an order-of-magnitude estimate with no contingency estimate included.

3.0 BENEFITS OF RAIL FREIGHT SERVICE IN INDIANA

Railroads are a vital component in the nation's economy. Railroads move over 40 percent of all ton-miles of intercity freight, nearly as much as trucks, barges, and airlines combined. The nation's railroads carry:

- 70 percent of automobiles and trucks
- 64 percent of coal
- 40 percent of grain
- 20 percent of chemicals

In addition to the transportation utility provided, the nation's railroads have a direct economic impact of $21 billion in wages and retirement benefits, and in the past five years have spent between $5 billion and $7 billion each year, on new equipment, roadway, and structures. The cost of providing railroad services, as measured by revenue per ton mile, has steadily decreased from a 1985 level of 3.04 cents to a 2000 level of 2.26 cents.

Railroads provide an essential component of the multimodal transportation system in Indiana. Although most of the rail network is privately owned, it creates substantial public benefits. The freight moved by railroad is of great commercial value to Indiana industries and agricultural producers. The loss or impairment of rail services would have significant impact on businesses, cities, and rural communities. Moreover, the loss or impairment of rail services would increase truck traffic in Indiana, and impact highway users and transportation agencies. With the possible exception of some petroleum and chemical products, truck transportation is the only alternative for the movement of freight on land.

Improvements in freight rail service can be expected to have important economic effects. Low cost and better service in freight movement have a positive effect on all Indiana firms engaged in the production, distribution, trade, and/or retail sale of physical goods. Reducing the per-mile cost of goods carriage means that any production facility can serve a wider market area, with potential gains from scale efficiencies. It also means a factory can draw supplies from a wider area with potential gains in terms of the cost and/or quality of parts and materials coming to the factory. The Federal

Highway Administration's (FHWA) Benefit-Cost Analysis Study describes the research documenting this benefit.

The key point identified in the FHWA study is that if businesses can reduce total logistics costs, including inventory and warehousing, by increasing expenditures on freight transportation, they can be expected to do so. The study cites several companies that increased their use of transportation, which in turn allowed them to save money by closing warehouses, increasing inventory turnover, and reducing employment.

The following classification scheme exemplifies the benefits associated with improvements in freight transportation. It was developed as part of the FHWA study.

Effects of Improved Freight Transportation

First-order Benefits	Immediate cost reductions to shippers, including gains to shippers from reduced transit times and increased reliability.
Second-order Benefits	Reorganization-effect gains from improvements in logistics. Quantity of firms' output changes; quality of output does not change.
Third-order Benefits	Gains from additional reorganization effects, such as improved products or some other change.
Other Effects	Effects that are not considered as benefits according to the strict rules of benefit-cost analysis, but may still be of considerable interest to policymakers. These could include, among other things, increases in regional employment or increases in rate of growth of regional income.

In 1999 the railroads in Indiana originated or terminated approximately 100.1 million tons of freight having an estimated value of approximately $83 billion.

In terms of tonnage, railroads in Indiana haul the equivalent of about 2.5 million truck loads per year. For purposes of example, should the tonnage currently carried by rail be transported on the Indiana road system, about $350 million in additional annual road maintenance would be needed (a 150-mile average haul and an even split between interstate and local road use was assumed in this example). A large-scale traffic shift such as this would increase highway congestion, reduce overall travel speeds, increase fuel consumption and other vehicle operating costs, and increase automobile emissions. Moreover, highway accidents, fatalities, and property damage would increase. Congestion is a growing concern in the I-80/90 corridor across the northern part of the state, as well as on I-465 around Indianapolis. Indiana motorists are already experiencing congestion-related delays and increasing fuel costs. These delays and costs would increase severely if there is a dramatic increase in truck traffic due to the impairment or elimination of rail freight service.

The importance of railroads in Indiana is further demonstrated by the release of the report *Indiana Shippers Perspective* (INDOT MultiModal Division, Rail Section) in December 2000. In that report, the results of a shipper survey regarding the impact of the Conrail acquisition by CSXT and NS railroads were documented. Grain shipper respondents indicated that 82 percent used rail to move the majority of their shipments and 64 percent considered themselves dependent on rail. Eighty percent of coal respondents reported that more than 50 percent of their shipments are transported by rail, and 33 percent consider themselves dependent on rail. Eighty-three percent of respondent fertilizer shippers transport primarily by rail, while 60 percent feel they are dependent on rail.

Railroads directly impact the Indiana economy by employing 5,821 persons (in 2000), and have a payroll of approximately $333 million. In addition, freight railroads also pay property taxes, diesel fuel taxes, and sales taxes on goods purchased in the state.

Amtrak expended $15.8 million for goods and services in Indiana in fiscal year 2001. Most of these expenditures occurred in the following locations:

- Gary $7,182,070
- Indianapolis 2,184,669

- Cedar Lake 1,748,029
- Beech Grove 1,657,520
- Elkhart 638.207
- Rochester 298,205
- Valparaiso 320,274

Improvements in freight rail service provide positive economic impacts for the State of Indiana. These benefits accrue to industry and to highway users.

3.1 Short Line Role

The Indiana short line railroad situation is somewhat unique when compared with other midwestern states. Typically, Midwest short lines are highly dependent upon the carriage of grain products for their revenues. In the Indiana situation, however, the top three short lines, which account for about 73 percent of all short line carloads handled, carry coal, metals, and chemicals as their principal commodities (675,330 carloads). However, once these lines are accounted for, the remaining picture becomes more conventional, with farm products and agribusiness being the dominant business sectors.

The top three short line carriers have a healthy carloads-per-mile statistic, with the least of the three handling 441 carloads per mile of route. The relatively high traffic densities of these short line railroads result from two serving the heavy industrial areas on the southern border of Lake Michigan, with the third benefiting from strong coal, petroleum, chemical, and lumber movements in the central section of the state. It is noted, however, that none of the top three short lines are currently 286-GWR capable. These three railroads have indicated a need for 286 capability.

The importance of short lines in Indiana is demonstrated by the fact that they serve 62 counties, of which 15 are rail-served exclusively by short lines. In terms of cities and towns in Indiana, 86 are served exclusively by short lines. Lists of counties, cities, and towns where short lines are the only rail access are contained in Appendices C and D.

3.2 Economic and Environmental Benefits

In Indiana, the Class I railroads serve 152 grain elevators and 26 feed mills/processing facilities. The short lines serve over 30 grain elevators and over 50 other facilities directly related to Agribusiness. Twenty-three short line railroads listed agribusiness products within the top three commodities they transported. These 23 short lines handled 16 percent of the total short line carload business.

In 1999, Indiana had a gross state product of more than $182.2 billion and ranked 15th in the nation. Agriculture accounts for about 1 percent of the state's economic production, which is about the same as for the nation. In 2001, Indiana had 6,300 farms encompassing 15.4 million acres. The average size of an Indiana farm was 244 acres. Cash receipts for Indiana farmers for crops and grains amounted to $2.8 billion. Agribusiness within the state generates $5 billion in commodity trade. Agribusiness includes business beyond the farm level, including food manufacturing, wholesaling, and retailing. Examples are businesses that operate grain, feed, storage, and processing facilities. In addition, agribusiness has an important impact on banking, insurance, and suppliers of farm implements and other services.

Agribusiness operates in a highly competitive business environment. A relatively minor increase in delivered price of an agricultural product can significantly impact competitiveness. Transportation costs are an important component of agribusiness production pricing. In addition, Indiana agribusiness competes in the highly competitive international market. The Agribusiness Council of Indiana (ACI) estimates that 25 percent of Indiana's agribusiness is transacted in the international

market. Because U.S. farms produce more than is consumed domestically, maintaining a competitive international agribusiness is critical to maintaining the viability of U.S. agribusiness as a whole. The impact of agricultural exports on the economy is far reaching. Every dollar of exports generates an additional $1.31 in economic activity in supporting sectors. Greater competition from overseas suppliers exacerbates the adverse effects of inefficient transportation.

Because railroads provide the lowest-cost land transportation for bulk commodities, they are an integral part of agribusiness. In particular, the short lines are important because they reach into rural areas and bring the benefits of lower transportation cost to help keep farms productive and competitive. In some cases, however, short lines are in danger of going out of business because revenues are not adequate to match operating and/or track/bridge rehabilitation expenses.

The abandonment of a short line railroad can impact rural communities and local economies in a variety of ways. Railroad-served customers will shift to trucks, which increases transportation costs and makes businesses less competitive. In some cases, the higher transportation costs can put a business out of business. The transfer of rail movements to trucks accelerates the deterioration of local roads and highways, adds to traffic congestion, and increases noise and air pollution. It should be noted that a state study found that 62.1 percent of the 46,446 miles of county paved roads already require improvements. As short lines primarily serve rural communities, it is the county road network that would handle the additional truck traffic resulting from a rail abandonment. This is particularly true in southern Indiana, where many counties lack access to interstate highways and rely on minor arterial and collector roads as the primary transportation infrastructure.

Further, rail abandonment can affect social costs such as personal income, taxes, and unemployment and welfare benefits. Also, rail abandonment affects property values and detracts from the region's ability to attract new business. For example, energy and processing/manufacturing industries that require shipments of large or heavy equipment and bulky material are unlikely to locate in a community without rail access.

Indiana has been and will continue to be interested in the health of its short line railroads. Periodically, Indiana will be faced with making rail continuation/assistance decisions regarding a particular short line. The choice is normally between (1) permitting abandonment to take place, thus accepting any social costs that result from the abandonment, or (2) continuing rail service through government or shipper subsidies/grants. Over the past 20 years, Indiana has provided assistance to Class II and Class III railroads for rehabilitation or construction of infrastructure through the Industrial Rail Service Fund (IRSF). The ISRF is further explained in section 6.2.3 of this report.

3.3 Public Funding Impact Analysis

The purpose of impact analysis is to identify and evaluate the total impacts of discontinuing rail service on a particular line, including social, economic, environmental, and other contributing factors. The following paragraphs describe the general factors to consider before making a railroad investment decision. There are two categories of benefits/costs, primary and secondary. Primary benefits are those benefits gained directly from the rehabilitation or improvement project. Secondary benefits are those benefits that are in an indirect consequence of the rehabilitation or improvement project.

3.3.1 Economic Benefits and Costs

Economic Impact

Abandonment of the rail line will require customers that previously relied on rail service to use alternate means of freight transport. The substitute mode usually results in an increase in cost over the rail service previously provided. With an increase, the added transport costs could cause some firms to transfer elsewhere or to close. Other firms will remain at their existing locations, but may be forced to reduce profits, increase prices, and reduce production or employment.

Job losses directly resulting from a rail service discontinuance are likely to produce a reduction in local wages and personal income. This reduction in jobs, wages, and income may induce a decline in the number of employees in service and service-related industries (local government, retail trade, insurance, public utilities) that the community can support because fewer goods and services are purchased in the community. The community is also adversely affected because the short line railroad no longer pays taxes.

Unemployment Cost

Temporary unemployment losses may occur due to abandonment of a rail line. For example, some shippers may be unable to absorb or pass on the increased transport costs resulting from the abandonment. Subsequent job losses may occur due to reduced production, transfer of operations, or plant closing. In addition, railroad employees may be laid off.

Business Relocation

Discontinuance of rail service could cause rail customers and other businesses to move to a different location.

Employment Benefits

Should the rail line be rehabilitated, new jobs could be created as a result of continued and expanded rail service, and the projects associated with the rehabilitation of the rail line. On the other hand, should the rail line be abandoned, it is possible that new jobs will be created in the trucking industry because of the shift of freight from rail to truck.

3.3.2 Highway Benefits and Costs

Increased Road Maintenance and Infrastructure Projects

Firms relying on rail service would be required to truck their products to and from the nearest alternative railhead. The fact that the commodity would already be on a truck increases the likelihood that it could be trucked all the way to its destination. The additional truck traffic would cause additional wear and tear on the highway system, reducing pavement service life expectancy and increasing road maintenance costs. In particular, discontinuance of short line service usually affects rural areas where roads can be less substantial and in poorer condition than in urban areas. The greater amount of fuel used by trucks per unit of freight carried increases dependence on foreign oil.

Road and Fuel Tax

If a rail line is abandoned, truck traffic increases. Additional truck traffic results in increased user revenues from the trucking industry, including fuel taxes and vehicle registration fees.

3.3.3 Environmental

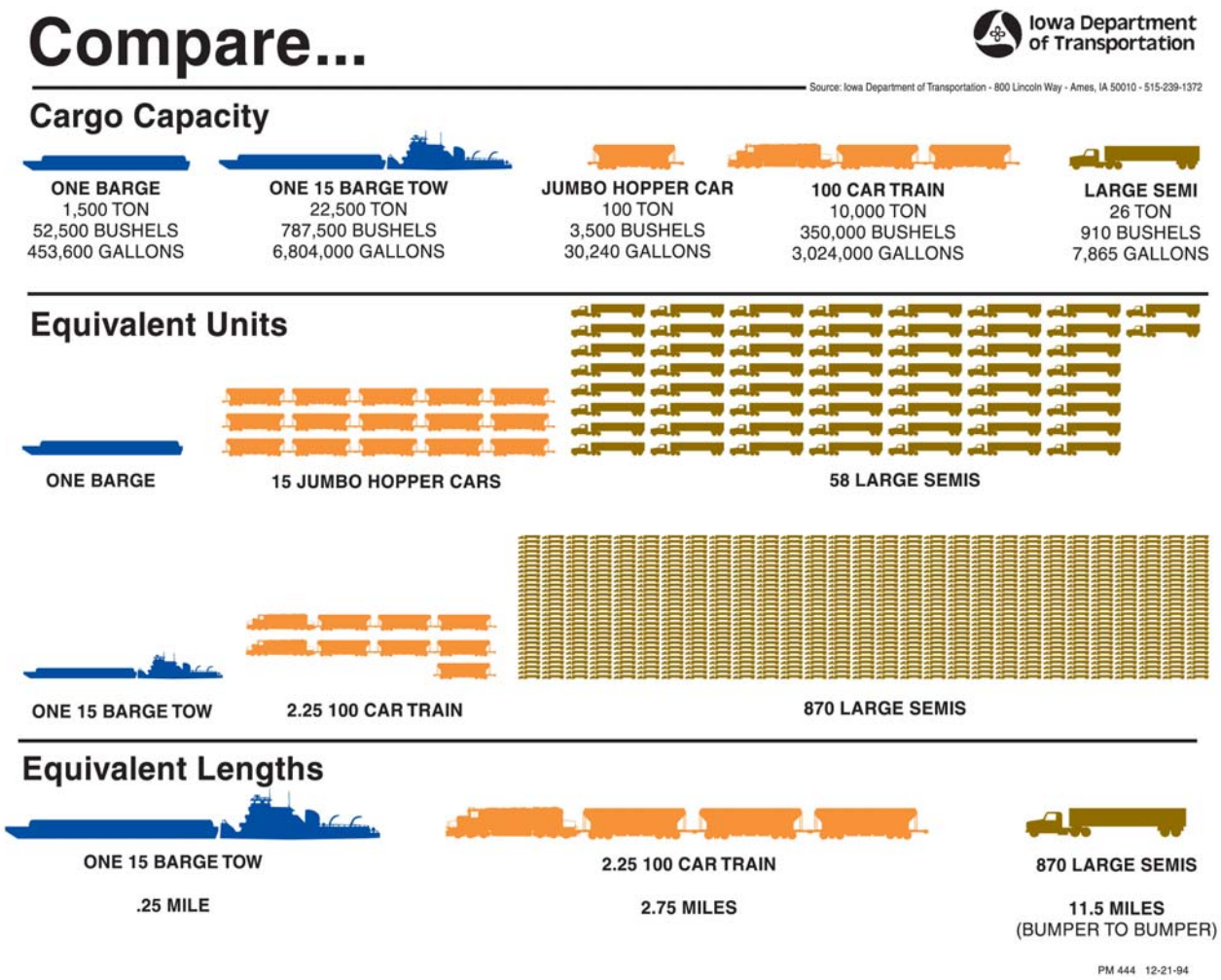
Air Quality and Emissions

Generally, there will be an increase in air pollution as a result of a rail service discontinuance resulting from the shift of rail freight to trucks. Air pollution is usually accounted for by calculating the change between rail and truck of these pollutants: carbon monoxide(CO), nitrogen oxides (NO_x), sulphur dioxide (SO_2), particulate matter (PM), and lead (Pb). Figure 3-1 presents a comparison of the relative efficiency of the surface modes, as well as their cargo capacity. It is provided through the courtesy of the Iowa Department of Transportation.

3.3.4 Railroad Funding Benefit Methodology

As a part of this Rail Plan, a railroad funding benefit methodology has been developed to estimate the economic and environmental impacts of railroad investment. Refer to Appendix E.

Figure 3-1 Comparison of Efficiency and Cargo Capacity of Freight Surface Modes



3.4 Short Line Network That May Require Public Investment

Three factors were considered in the following analysis to determine what Indiana short line railroads may not have sufficient revenues to cover long-term maintenance costs, and therefore may require long-term public investment. These factors are:

- Carloads per mile. A threshold of 50 carloads per mile (either loads originated or terminated) is used as a general indicator of economic viability. Railroads handling below 50 carloads per mile generally have difficulty meeting long-term maintenance needs. The 50-carloads-per-mile threshold is based upon research conducted by the Federal Railroad Administration (FRA) in the late 1970s. For railroads 15 miles or longer, questionable difficulty ranged between 70 and 30 carloads per mile; for shorter railroads, the range was between 80 and 25 carloads per mile. The 50-carloads-per-mile threshold selected for use herein represents the approximate midpoint of the two ranges. The FRA research has become a general industry standard. The difficulty range is also affected by the commodity mix and the per-carload average revenue.
- 286,000 lbs. Capability. The growing importance of 286 capability will affect the viability of a given line, especially if its major commodities are bulk materials such as grain and farm products.
- Traffic trends. Carload data for individual short lines were studied for the period 1999 to 2001 to develop an overall business trend as either upward, unchanged, or downward.

A three-tiered stratification was developed to determine the level of difficulty any given railroad has (based on the three factors) meeting long-term maintenance needs without public investment. The stratification is as follows:

Level 1 - Most Difficulty
Short line railroads affected by all three evaluation factors: 50 carloads per mile or below, need for 286 capability, and a negative traffic trend (through 2001):

- Elkhart & Western Railroad Company
- Indiana Northeastern Railroad Company
- Indiana Southwesten Railway Company
- Madison Railroad

Level 2 – Moderate Difficulty
Short line railroads affected by two evaluation factors - 50 carloads per mile and below, and either a need for 286 capability or a negative traffic trend (through 2001):

- Dubois County Railroad Company – Need 286 capability
- BeeLine Railroad, Inc. – Need 286 capability
- A&R Line, Inc. – Negative traffic trend

Level 3 – Minor Difficulty
Short line railroads having a traffic factor of 50 carloads per mile, or below, but neither of the other factors:

- J.K. Line, Inc
- The Indiana & Ohio Railway
- Port Authority of Auburn, Indiana, Railroad
- Hoosier Heritage Port Authority
- Logansport & Eel River Short Line, Inc.

See Figure 3-2 and Figure 3-3 for the locations of the above-referenced short line railroads.

Condition Assessment Qualifiers

Factors other than providing transportation and economic benefits to a community may affect a railroad's financial condition. An example is revenue from the storage of surplus rail cars, excursion train revenue, or leases of excess property. As these other sources of revenue are not generally reported by short lines, they have not been included in the above analysis. Depending on the level of such revenue, the ability of a short line to meet its long-range capital and maintenance needs without public assistance may vary.

The above stratification and evaluation is based on very general information and is intended to serve only as an indicator of potential conditions and as a guide for INDOT to anticipate future funding needs**. No representation as to the actual viability of the individual railroads mentioned above is intended or implied herein.**

4.0 RAIL INTERMODAL FACILITIES

Rail intermodal facilities can be classified into two major categories: containerized and break bulk. Containerized facilities in Indiana are located on CSXT at Indianapolis and Evansville; on Norfolk Southern at Fort Wayne; and on the Toledo, Peoria & Western at Remington. Intermodal service is also available to Indiana shippers who can be efficiently served from rail intermodal terminals located in adjacent states, such as terminals at Chicago, Cincinnati, and Louisville.

To a large extent, the marketing of containerized—TOFC/COFC—rail intermodal freight service has been performed by third-party logistics entities, such as the Hub Group, Inc. These firms perform the direct retail marketing with a large percentage of intermodal customers. These third-party enterprises contract with the rail line-haul carrier for specified levels of annual volume commitments. Thus, a shipper receives a single freight bill from the third-party enterprise for the bundled service of local drayage and line-haul rail. Rail carriers do, however, market directly to certain segments of their intermodal business such a United Parcel Service, motor common carriers such as J.B. Hunt and Schneider National, and steamship lines.

4.1 Indiana Intermodal Development

The potential expansion of containerized—TOFC/COFC—rail intermodal freight service in Indiana can take several generalized forms. One is additional service in existing lanes, which would provide an increase in service and possibly be more truck competitive. A second form of expansion is new service between markets not currently served. A third form is the introduction of emerging intermodal technology in short haul markets.

Since approximately three-quarters of Indiana interstate freight tonnage is truck traffic, the market is large. However, the majority of Indiana interstate truck tonnage originates or terminates in the adjacent states of Illinois, Ohio, Kentucky, and Michigan. Thus, rail intermodal service is at both a service and cost disadvantage, attributable to the relatively short hauls to/from adjacent states. Rail intermodal service generally requires a line-haul of 500 to 600 miles in order to generate sufficient revenue to cover the terminal expenses and take advantage of rail line-haul efficiencies.

The first form of expansion, the expansion of service in existing corridors, occurs when one or more trains is added to a rail market that currently exists. The particular challenge is to gather enough additional traffic to justify the additional expense. More frequent service can be expected to improve the reliability of service, but cannot be sustained in the long-term without a corresponding increase in volume.

Figure 3-2 Short Lines That May Require Investment – NORTH

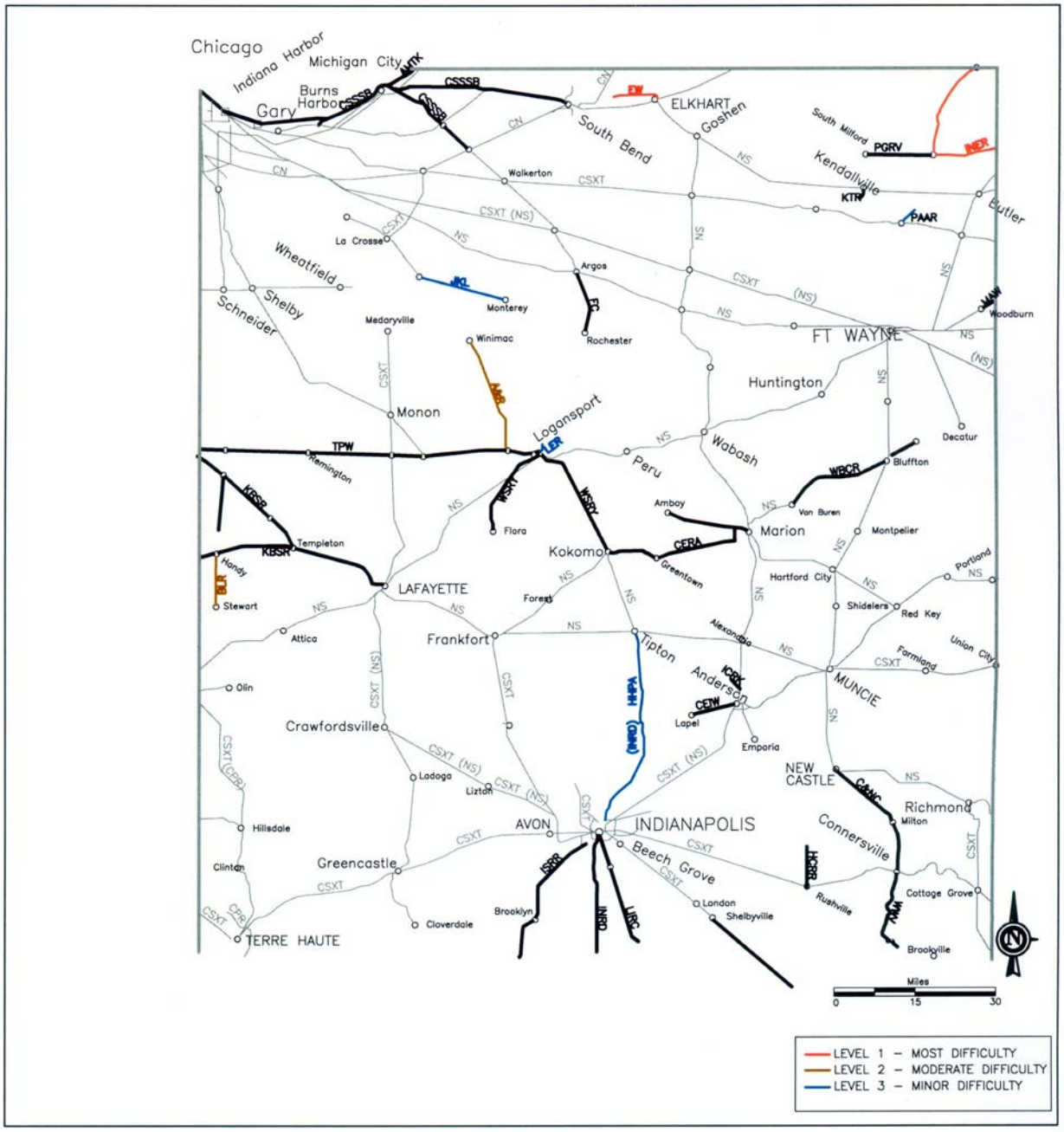


Figure 3-3 Short Lines That May Require Investment – SOUTH